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09/809,244	03/16/2001	Toshio Sakai	HEIW:006	5311

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EXAMINER	
DONG, DALEI	

ART UNIT	PAPER NUMBER
2875	

DATE MAILED: 04/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Offic Action Summary	Application N . 09/809,244	Applicant(s) SAKAI ET AL.	
	Examiner Dalei Dong	Art Unit 2875	

-- The MAILING DATE of this communication appears on the c ver sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 March 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. *09/809,244* .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. Figures 20-23 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: in Figure 18. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:

On page 30, paragraph 1 lacks component numbers.

Appropriate correction is required.

Claim Objections

4. Claims11-18 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-2, 6-7, 10-15, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,951,350 to Aoki in view of 5,433,639 to Zahuta.

Regarding to claims 1, 7, 10-11, 15, 17-18, Aoki discloses in Figure 1, a plasma display panel comprising "a front panel which is made up of front glass substrate 11 with discharge electrodes 12, dielectrics glass layer 13, and protecting layer 14 thereon; and a back panel which is made up of back glass substrate 15 with address electrode 16, partition walls 17, and fluorescent substance layer 18, the front panel and back panel being bonded together. Discharge space 19, which is sealed with the front panel and back panel, is charged with a discharge gas. Driving circuits shown in FIG. 3 are used to

fire discharge electrodes 12 and address electrode 16 to drive them" (column 5, line 49-59).

Aoki also discloses in Figure 4, "a schematic illustration of ink applying apparatus 20 of Embodiment 1 used for forming discharge electrodes 12, address electrode 16, and fluorescent substance layer 18" (column 6, line 51-54).

Aoki further dislcsoes in Figure 4, "in ink applying apparatus 20 shown in the drawing, server 21 stores electrode material ink or fluorescent substance ink. Pressure pump 22 puts pressure upon either of the above types of ink and supplies the ink to header 23. Header 23 includes ink chamber 23a and nozzle 24. With this construction, the ink is continuously spouted out from nozzle 24" (column 6, line 55-61).

Aoki further yet discloses in Figure 4, "header 23 is formed as one solid block by processing a metal material by machining and electric discharge machining" (column 6, line 62-64).

Aoki further yet dislcsoes in Figure 4, "the electrode material ink is made by blending silver grains as an electrode material, glass grains, a binder, a solvent, etc. so that an appropriate viscosity is generated" (column 6, line 65-67).

However, Aoki does not disclose a apparatus for producing an plasma display panel. Zahuta teaches in Figure 3, "a processing system 90 is provided. The processing system 90 includes multiple vacuum chambers which are discussed in terms of their functions. A first vacuum chamber 92 is provided, numeral 62. The parts and subassemblies are placed or loaded into the first vacuum chamber 92, numeral 64, and the

first vacuum chamber is sealed and evacuated using a vacuum pump, numeral 66" (column 5, line 3-10).

Zahuta also teaches in Figure 3, "a gas-tight first vacuum lock 100 (first unit) provides external access to the first vacuum chamber 92. A gas-tight second vacuum lock 102 separates the first sub chamber 94 from the second subchamber 96. A gas-tight third vacuum lock 104 separates the second subchamber 96 from the third subchamber 98. A gas-tight fourth vacuum lock 106 separates the third subchamber 98 from an evacuated assembly chamber 108. The fourth vacuum lock 106 thus provides external access to the first vacuum chamber 92 at the end opposite the first vacuum lock 100" (column 5, line 23-33).

Zahuta further teaches in Figure 3, "Contaminants are removed from the parts and subassemblies, numeral 68. In the illustrated processing system 90, two cleaning stages are provided for illustration. There may be multiple cleaning stages because some parts and subassemblies may require different cleaning than other parts and subassemblies, and the present approach gives complete flexibility in this regard. Examples of types of cleaning operations that may be used in vacuum include plasma glow discharge cleaning, ultraviolet photon stimulated desorption, infrared heating, ultraviolet cleaning, and ion bombardment, all of which are known in the art. Again by way of example, the first sub chamber 94 might be provided with the apparatus for performing ultraviolet cleaning and the second subchamber 96 might be provided with the apparatus for performing ion bombardment. Some parts or subassemblies might be most effectively cleaned by one process but should not be exposed to the other. In these cases, the parts or subassemblies

are loaded into the cleaning subchamber 94 or 96 that is appropriate for it" (column 5, line 42-62).

Zahuta further yet teaches in Figure 3, "after cleaning, many of the parts and components are baked in vacuum, numeral 69, in the third subchamber 98 (second unit). The bakeout temperature is typically up to about 250.degree. C. In this case, only a single bakeout subchamber 98 is shown, but there could be additional such subchambers. The bakeout removes additional adsorbed contaminants from the surfaces of the parts and components. After bakeout is complete, the parts and components are moved to the assembly chamber 108" (column 5, line 63-68 to column 6, line 1-3).

Zahuta further yet teaches in Figure 3, "in the assembly chamber 108 (third unit), the parts, subassemblies, and getter are assembled together, numeral 76. Assembly may be accomplished by any of a variety of techniques, including for example robotic assembly, other fully or partially automated assembly, or manual assembly as by using manipulators. The assembly is moved to a vacuum joining chamber 114 through a sixth vacuum lock 116" (column 6, line 21-28).

Zahuta further yet teaches in Figure 3, "in the vacuum joining chamber 114 (fourth unit), the assembled components are joined permanently or semi-permanently using any appropriate technique, numeral 78. Examples of joining techniques include a metal gasket placed between the components, an O-ring gasket placed between the components, cold metal welding of the components, electron beam welding, and laser welding. FIG. 2 shows only a single assembly chamber 108 and a single joining chamber 114, but there could be others as appropriate for the particular type of dewar assembly.

For example, it might be appropriate to electron beam weld two particular components together, so a first joining chamber could be provided with an electron beam welder. Two other components might be more properly joined using laser welding, and a second joining chamber would be provided with a laser welder. The various parts and subassemblies to be joined could be moved to the appropriate joining chambers" (column 6, line 29-46).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have add the electrode and fluorescent layer applying apparatus of Aoki to the processing apparatus of Zahuta in order to manufacture the display with ease and precision; furthermore, improve the efficiency, quality and characteristics of the display in term prolong the lifetime of the display device.

Regarding to claims 2, 6 and 12-14, Zahuta discloses the claimed invention except for the arrangement of first unit is arranged between the second unit and the third unit, further the forth unit is connected to the first unit. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have rearrange the first unit between the second unit and the third unit, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse,* 86 USPQ 70.

7. Claims 3-5 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,951,350 to Aoki in view of 5,433,639 to Zahuta in further view of U.S. Patent No. 5,499,939 to Itoh.

Regarding to claims 3 and 16, Aoki discloses a plasma display panel comprises of a front panel which is made up of front glass substrate 11 with discharge electrodes 12, dielectrics glass layer 13, and protecting layer 14 thereon; and a back panel which is made up of back glass substrate 15 with address electrode 16, partition walls 17, and fluorescent substance layer 18, the front panel and back panel being bonded together. Discharge space 19, which is sealed with the front panel and back panel, is charged with a discharge gas. Driving circuits shown in FIG. 3 are used to fire discharge electrodes 12 and address electrode 16 to drive them.

However, Aoki fails to disclose an apparatus for producing a plasma display panel. Zahuta teaches a first unit for carrying the supporting substrate in, a second unit for heating at least the supporting substrate before forming the organic luminescence medium, a third unit for forming the organic luminescence medium and the upper electrode and a fourth unit for sealing the periphery with the sealing member.

However, Zahuta fail to teach wherein the second unit is composed of a cooling room. Itoh teaches in Figure 3, "the envelopes thus sealed each are then transferred to a slow cooling chamber 14 which is charged with the same inert gas as that of the sealing chamber 13, in which the envelope is slowly cooled to a temperature of 200.degree. to 400.degree. C., so that the oxide solder is changed from a molten state to a solid state" (column 7, line 34-39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have add the electrode and fluorescent layer applying apparatus of Aoki and the cooling chamber of Itoh to the processing apparatus of Zahuta in order to

manufacture the display with ease and precision with a reduction in cost; furthermore, improve the efficiency, quality and characteristics of the display in term prolong the lifetime of the display device.

Regarding to claims 4 and 5, Aoki discloses a plasma display panel comprises of a front panel which is made up of front glass substrate 11 with discharge electrodes 12, dielectrics glass layer 13, and protecting layer 14 thereon; and a back panel which is made up of back glass substrate 15 with address electrode 16, partition walls 17, and fluorescent substance layer 18, the front panel and back panel being bonded together. Discharge space 19, which is sealed with the front panel and back panel, is charged with a discharge gas. Driving circuits shown in FIG. 3 are used to fire discharge electrodes 12 and address electrode 16 to drive them.

However, Aoki fails to disclose an apparatus for producing a plasma display panel. Zahuta teaches a first unit for carrying the supporting substrate in, a second unit for heating at least the supporting substrate before forming the organic luminescence medium, a third unit for forming the organic luminescence medium and the upper electrode and a fourth unit for sealing the periphery with the sealing member.

However, Zahuta fail to teach wherein the second unit is composed of an inert gas circulating device and a cooling device. Itoh teaches in Figure 3, "Upon completion of the preliminary calcination, a gate valve 11-1 is opened, so that a tray on which the envelopes are put is guided to a gas substitution chamber 12 by a transfer unit. In the gas substitution chamber 12, the gas located therein is evacuated therefrom by means of a

rotary pump 12-3 to cause gas in the envelope to be attendantly evacuated and then inert gas such as nitrogen gas, argon gas, carbon dioxide gas or the like is fed from an inert gas source 19 to the gas substitution chamber 12 through a valve 12-1 rendered open, to thereby cause the envelope to be charged with the inert gas" (column 7, line 10-20).

Itoh also teaches in Figure 3, "the envelopes thus sealed each are then transferred to a slow cooling chamber 14 which is charged with the same inert gas as that of the sealing chamber 13, in which the envelope is slowly cooled to a temperature of 200.degree. to 400.degree. C., so that the oxide solder is changed from a molten state to a solid state" (column 7, line 34-39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have add the electrode and fluorescent layer applying apparatus of Aoki and the inert gas circulating device and cooling chamber of Itoh to the processing apparatus of Zahuta in order to manufacture the display with ease and precision with a reduction in cost; furthermore, improve the efficiency, quality and characteristics of the display in term prolong the lifetime of the display device.

8. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,951,350 to Aoki in view of 5,433,639 to Zahuta in further view of U.S. Patent No. 5,813,893 to Robinson.

Regarding to claims 8 and 9, Regarding to claim 3, Aoki discloses a plasma display panel comprises of a front panel which is made up of front glass substrate 11 with discharge electrodes 12, dielectrics glass layer 13, and protecting layer 14 thereon; and a

back panel which is made up of back glass substrate 15 with address electrode 16, partition walls 17, and fluorescent substance layer 18, the front panel and back panel being bonded together. Discharge space 19, which is sealed with the front panel and back panel, is charged with a discharge gas. Driving circuits shown in FIG. 3 are used to fire discharge electrodes 12 and address electrode 16 to drive them.

However, Aoki fails to disclose an apparatus for producing a plasma display panel. Zahuta teaches a first unit for carrying the supporting substrate in, a second unit for heating at least the supporting substrate before forming the organic luminescence medium, a third unit for forming the organic luminescence medium and the upper electrode and a fourth unit for sealing the periphery with the sealing member.

However, Zahuta fail to teach a buffer room for the third unit. Robinson teaches in Figure 5, "a vacuum chamber 20 that is evacuated by vacuum pump 34. There are top and bottom pressure plates (16A not shown) and 16 B respectively position to receive the top face plate 2, the substrate 6 and seal ring 4. Also within the vacuum chamber 20 is a face plate cassette 22, a seal ring cassette 24 and a substrate cassette 26. A articulating arm 38A which is a device similar to that disclosed in U.S. Pat. No. 4,891,087 sequentially retrieves a substrate 6 from the substrate cassette 26 and places it on the pressure 16b; retrieves a seal ring 4 from the seal ring cassette 24 and places it in alignment over the substrate 6" (column 3, line 65-67 to column 4, line 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have add the electrode and fluorescent layer applying apparatus of Aoki and the cassette or "buffer room" of Robinson to the processing apparatus of Zahuta

in order to manufacture the display with ease and precision with a reduction in cost; furthermore, improve the efficiency, quality and characteristics of the display in term prolong the lifetime of the display device.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following prior art are cited to further show the state of the art of an apparatus for producing a display device.

U.S. Patent No. 5,846,110 to Kanagu.

U.S. Patent No. 6,007,397 to Ju.

U.S. Patent No. 6,517,403 to Cooper.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalei Dong whose telephone number is (703)308-2870. The examiner can normally be reached on 8 A.M. to 5 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (703)305-4939. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9318 for regular communications and (703)872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

D.D.
April 15, 2003

Sandra O'Shea
Supervisory Patent Examiner
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